Short-Term Outcome (1 year) of Yellow Subthreshold Pulsed Laser Treatment on Diabetic Macular Edema

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【Introduction】

- First line of therapy on Diabetic Macular Edema(DME) is intravitreal injection(anti-VEGF). However, because of medical cost and repeat treatment, it is difficult to treat and other treatment still remains demands as alternative treatment.
  Subthreshold pulsed laser treatment is safety treatment which does not damage photoreceptor cells and it is treated on some retinal diseases including DME.[1)]
- Though there are many publications of subthreshold pulsed laser treatment on DME[2)3)], there are few publications which compares focal laser treatment.

1) Gawęcki et al. J Clin Med 2019 2) Ohkoshi et al. AJO 2010 3) Takatsuna et al. JJO 2011

【Purpose】

To evaluate the long-term functional anatomical effects and safety of yellow wavelength subthreshold pulsed laser treatment on DME.

【Method】

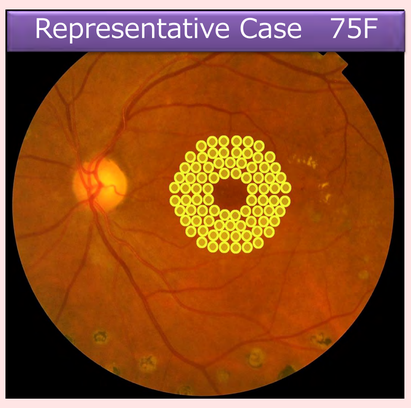
- 47 eyes (male: 30, female: 17, mean = 64.3±9.9 years, Jan. 2010 - Apr. 2018)
- Visual acuity: less than 0.8, CRT: more than 350μm, center-involving DME, Patients who were treated on DME treatment past 4 months were excluded.
- Conflict of Interest (COI) of the Principal Presenter : No potential COI to disclose
- Cases that received treatment for ME (STTA, anti-VEGF drugs, PC) in the last 4 months were excluded.
- Monthly follow-up was performed, and retreatment was performed if ME with a CRT of 350 μm or more remained.
- As primary endpoints, logMAR visual acuity at the first year of treatment and central retinal thickness (CRT) on optical coherence tomography (OCT) were compared with those pre-treatment.

【Result】

➢ Patients Overview

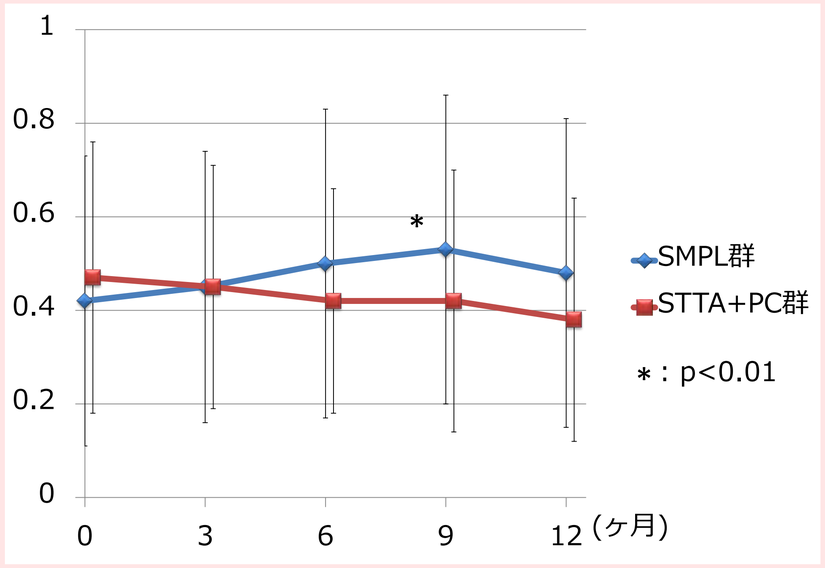
	SMPL (n=24)	STTA+PC (n=23)	P value
Sex(male:female)	14:10	16:7	0.42
Ave. years	64.8±11.8yrs	63.7±7.6yrs	0.31
Ave. logMAR VA (pre-treatment)	0.42±0.31	0.47±0.29	0.50
Ave. CRT evaluated by OCT (pre-treatment)	422±220μm	501±124μm	0.15

➢ Subthreshold Pulsed Laser Treatment



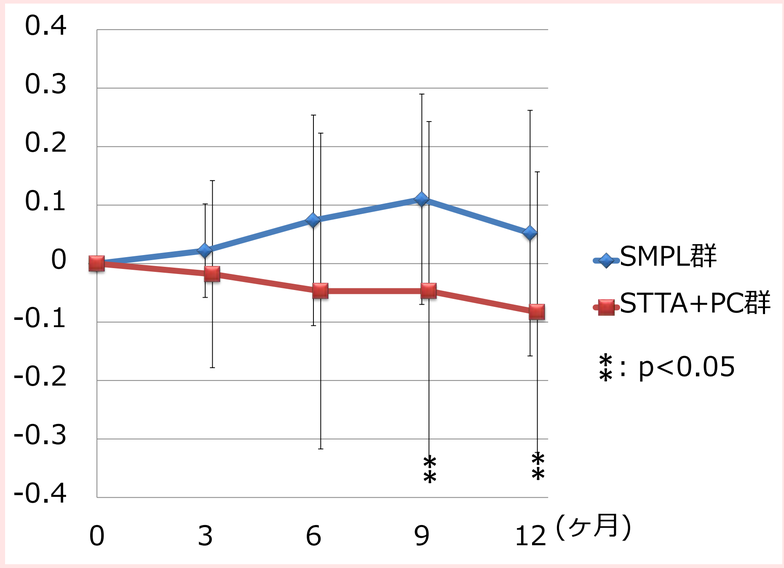
- LIGHTMED LIGHTLas Truscan™
- Coagulation situation:
  Wavelength: 577nm, Spot Size: 300μm, Pulse width: 200msec. Subthreshold line was decided by using continuous wave laser at first. As 2nd step, using SP mode and doubled the power of 1st step(180-240mW)
  , Duty Cycle 10%
- Irradiation without a coagulation interval in the arcade except the fovea (left figure)
- Follow up on a monthly basis and add SMPL if edema remains

➢ logMAR VA Changes Overtime



Mann-Whitney U test, Intragroup Comparison

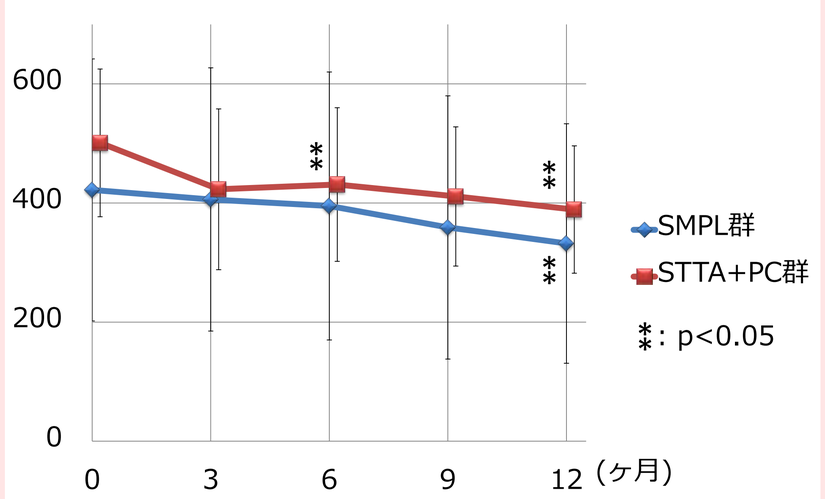
➢ Transition of logMAR VA Changes



Mann-Whitney U test, Comparison Between Group

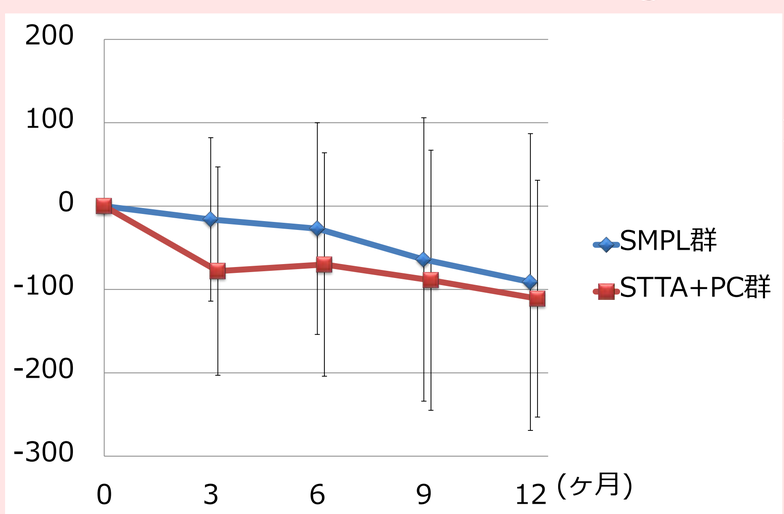
➢LogMAR visual acuity at 12 months was not significantly different in both groups compared to pre-treatment.
➢The change in logMAR visual acuity was significantly greater in the STTA + PC group than in the SMPL group after 9 months.
➢CRT at 12 months was significantly decreased in both groups compared to pre-treatment.
➢The CRT change was not significantly different between the two groups during all follow-up periods.
➢There was no significant difference between the two groups in the average number of additional treatments for 12 months.

➢ CRT Changes Overtime



Mann-Whitney U test, Intragroup Comparison

➢ Transition of CRT Change



Mann-Whitney U test, Comparison Between Group

➢ Total number of additional treatments and Breakdown

	SMPL	STTA+PC	P
Additional PC	4.13±2.52	3.13±2.12	0.19
Additional STTA	-	0.74±1.05	-

Mann-Whitney U test

【Discussion】

- In the group of SMPL, it is recognized that reduced CRT post 12 months. This result is as same as already reported. [4)5)]
- The visual acuity in the group of SMPL is still maintained. There is no significant improvement compared to pre-treatment. This is because this research included mean CRT on pre-treatment is more than 400μm.[6)]

4) Vujosevic et al. Retina 2010 5) Inagaki et al. JJO 2015 6) Mansouri et al. Eye 2014

【Conclusion】

Subthreshold Micro Pulsed Laser Treatment on DME is significant decrease on CRT after 1 year. Outcome on Visual acuity is limited.

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